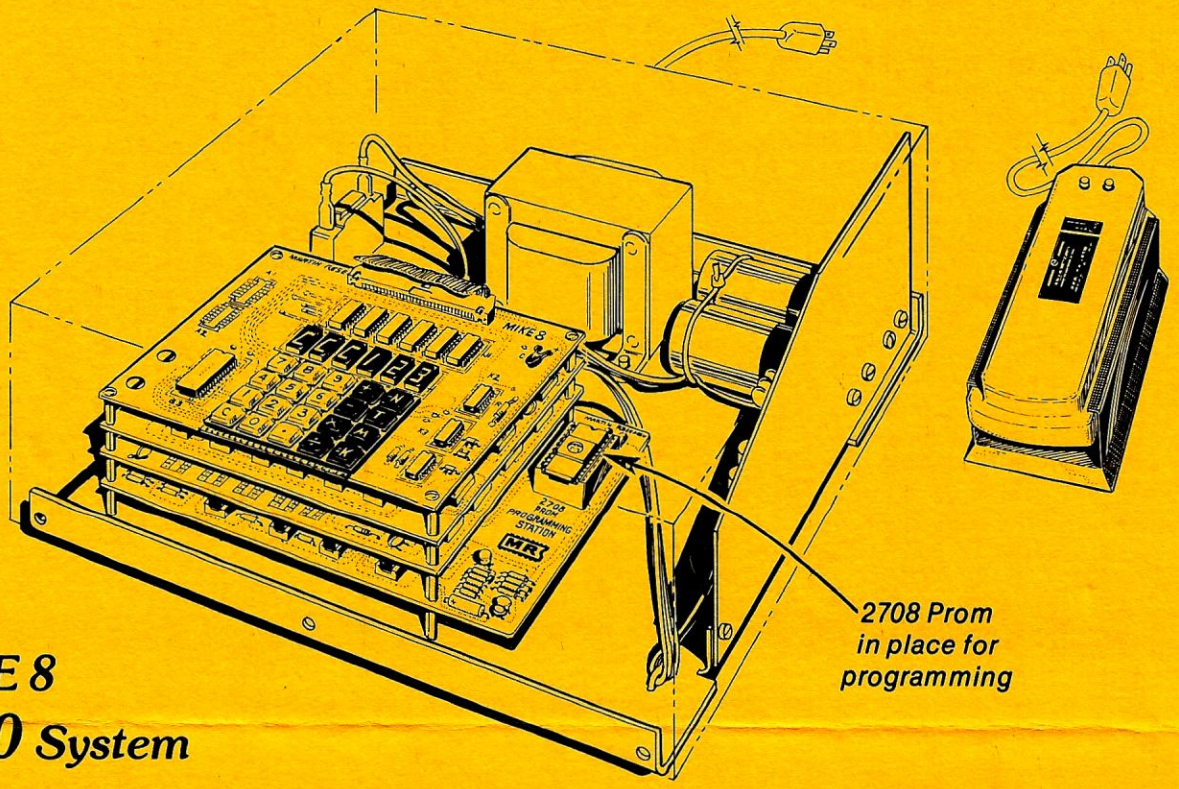
*Martin Research's compact microcomputers have been at the forefront of the action since the microprocessor revolution began. Months ahead of all others with console board keys for octal entry, digit displays and a monitor in ROM, Martin Research gives users the added advantages of flexibility, minimum size and lowest prices.*

# Today's ADVANCED CONCEPT in microcomputers




## MIKE 8
## Z-80 System

*Model 882, with 2708 Prom Programmer, Power Supply, Cover and Ultra-Violet Prom Eraser*

The **modular micros** from Martin Research offer unique values in microprocessor technology. Designed around a universal bus structure, the series includes micros based on the industry's leading chips—the 8080 and the Z80. The **modular micros** are ideal for:

- **Industrial product development.** Our flexible packaging allows easy expansion. Sophisticated monitor programs for software debugging.
- **Production use.** Design a product using a development system shown here—and then go right into production with **modular micro** boards. Cost-effective modularity.
- **Education.** Used widely both in institutional coursework and for informal training.
- **Personal computing.** For the enthusiast who knows the value of hands-on microprocessing, both at work and in the home.

The standard modules are assembled, tested, and guaranteed. There is no need to tie up an expensive teletypewriter—or enter data on cumbersome toggleswitches. Each system comes with a monitor program allowing the user to program the computer with the handy calculator-style keyboard, checking results on six large, bright LED digit displays.

The **MIKE 3** microcomputer is based on the industry-standard 8080, now sourced by more major semiconductor houses than any other MPU. The **MIKE 3** starts with a three-board version for less than $400, and is supported by a number of options and extras. (See chart, over.)

Martin Research proudly announces the **MIKE 8**, based on the powerful Z80 processor. The **next** industry standard, the Z80 executes a superset of the 8080's instructions—the 78 8080 codes, compatible at the machine level, plus 80 extra instructions. These include relative addressing, block search, block transfer, single-bit testing, plus many more. The **MIKE 8** starts at under $500.

The Model 882, illustrated above, is a Z80 system loaded with these impressive features:

- **PROM Programmer** for the 2708 1K by 8 PROM. Module develops +12, -5, and +27 volts from the +5 volt supply. An extra 2708 is included, ready for programming, plus an ultraviolet PROM eraser!
- **The MIKE 8 MONITOR,** a 1K package supporting powerful DEBUG features, including single-stepping and stepping through subroutines. Also RAM test; block memory moves; PROM programming; insertion of extra bytes into an existing program—and more.
- **4K Ram**—a full 4,096 bytes of 450 ns RAM.
- **Z80 Tech Manual,** from the manufacturer.
- **Power supply** with plenty of 5-volt power—all the system needs!
- **Only $895,** for all this! Less than what you'd expect to pay for the PROM programmer, let alone a powerful microprocessor development system.

*No line of microcomputers anywhere more flexible, more compact than . . .*

**modular micros** **martin research**

3336 commercial avenue / northbrook, illinois 60062 / (312) 498–5060

## COMPARISONS OF LEADING MICROPROCESSOR DEVELOPMENT SYSTEMS

| Feature | Martin Research Model 882 | Martin Research Model 822 | Intel Prompt 80 |
|---|---|---|---|
| PROCESSOR | Z80 | 8080 | 8080 |
| 78 8080 INSTRUCTIONS | YES | YES | YES |
| 80 EXTRA Z80 INSTRUCTIONS | YES | NO | NO |
| INTERNAL CPU REGISTERS | 17 | 7 | 7 |
| RELATIVE ADDRESSING | YES | NO | NO |
| BLOCK TRANSFERS, SEARCH FOR WORD | YES | NO | NO |
| BIT TEST INSTRUCTIONS | YES | NO | NO |
| SET BREAKPOINTS | YES | YES | YES |
| SINGLE-STEP | YES | YES | YES |
| STEP THROUGH SUBROUTINES | YES | YES | NO |
| SET TRAPS | YES | YES | NO |
| BYTE INSERTION | YES | YES | NO |
| INSPECT, MODIFY REGISTERS, MEMORY | YES | YES | YES |

| Feature | Martin Research Model 882 | Martin Research Model 822 | Intel Prompt 80 |
|---|---|---|---|
| 32-CHANNEL SCOPE DISPLAY | OPT. | YES | NO |
| 2708 PROGRAMMER | YES | YES | YES |
| EXTRA 2708's | ONE | ONE | TWO |
| PROM ERASER | YES | YES | NO |
| RAM PROVIDED | 4K | 4K | 1K |
| ONE SERIAL, ONE PARALLEL I/O PROVIDED | OPT. | OPT. | YES |
| CALCULATOR KEYS, DECODED DIGITS | YES | YES | YES |
| HARDWARE EXPANDABLE | YES | YES | YES |
| POWER SUPPLY | YES | YES | YES |
| SYSTEM ENCLOSURE | YES | YES | YES |
| MANUALS, SCHEMATICS, LISTINGS | YES | YES | YES |
| PROGRAMMING PAD | YES | YES | YES |
| MICROCOMPUTER DESIGN BOOK | YES | YES | NO |
| **PRICE** | **$895** | **$995** | **$1495** |

| MODEL | DESCRIPTION | REMARKS | UNIT LIST PRICES | Z-80 System—MIKE 8 872 | 880 | 881 | 882 | 8080 System—MIKE 3 813 | 814 | 822 |
|---|---|---|---|---|---|---|---|---|---|---|
| AT481 | Z80 CPU Board | POWERFUL INSTRUCTION SET. THE NEXT INDUSTRY STANDARD. | $199 | ✓ | ✓ | ✓ | ✓ | — | — | — |
| AT476 | 8080 CPU Board | THE INDUSTRY STANDARD CPU. FULLY BUFFERED BUS. | $189 | — | — | — | — | ✓ | ✓ | ✓ |
| AT485 | 2708 Programmer | PROGRAMMER; SPACE FOR 2 PROMS; 256-BYTE RAM STACK. | $189 | — | ✓ | ✓ | ✓ | — | — | ✓ |
| 2230-002 | MIKE 8 Monitor | MANY VALUABLE PROGRAMMING DEBUG FEATURES; 1K IN 2708. | $50 | — | ✓ | ✓ | ✓ | — | — | ✓ |
| 2199 | 2708 Prom | EXTRA PROM, FOR USE BY OPERATOR. 1K BY 8. | $45 | — | — | ✓ | ✓ | — | — | ✓ |
| AT423 | Prom/RAM Board | 512 BYTES RAM (EXP. TO 1K); SPACE FOR 2K PROM (1702'S). | $94 | ✓ | — | — | — | ✓ | ✓ | — |
| ~~2220-004~~ | ~~MIKE 8 Monitor~~ | ~~1K OPERATING SYSTEM IN FOUR 1702 PROMS.~~ | ~~$100~~ | ✓ | — | — | — | — | — | — |
| 2220-17 | MIKE 3 Monitor | BASIC ¼K MONITOR. FOR LOADING, EXECUTING PROGRAMS. | $25 | — | — | — | — | ✓ | ✓ | — |
| 2220-24 | Debug Prom | 256 × 8 PROM, ADDS DEBUG FEATURES TO 8080. | $25 | — | — | — | — | — | ✓ | — |
| AT405-4 | 4K RAM Board | FULL 4096 8-BIT WORDS OF 450 NS STATIC RAM. | $179 | — | — | ✓ | ✓ | — | — | ✓ |
| AT405-2 | 1K RAM Board | 1K OF RAM, WITH SOCKETS FOR EXPANSION TO 4K. | $109 | — | ✓ | — | — | — | — | — |
| AT420 | Console Board | CALCULATOR-STYLE KEYBOARD; SIX DECODED LED DIGITS. | $78 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| AT477 | Debug Board | SUPPORTS 32-CHANNEL DISPLAY OF MICROPROCESSOR SIGNALS. | $97 | — | — | — | — | — | ✓ | ✓ |
| PS11005 | Z80 Power Supply | + 5V AT 6A, WITH BLACK BOX, COVER AND LINE CORD. | $139 | — | — | — | ✓ | — | — | — |
| PS11006 | 8080 Power Supply | + 5V, 3A; + 12V, -12V, 0.8A EACH, WITH ENCLOSURE | $189 | — | — | — | — | — | — | ✓ |
| PE11011 | Prom Eraser | ULTRA-VIOLET PROD. UVS-11. ERASES 2708 IN 32 MINUTES. | $47 | — | — | — | ✓ | — | — | ✓ |
| MN2208 | Z80 Tech. Manual | MANUFACTURER'S MANUAL, 71 PAGES. | $7.50 | ✓ | ✓ | ✓ | ✓ | — | — | — |
| — | Hardware Items | CABLE; CABLE CONNECTORS; SPACERS; SCREWS. | $28 | $ 22 | ✓ | ✓ | ✓ | $ 22 | ✓ | $ 34 |
| — | Manual & Book | LOOSE LEAF MANUAL PLUS MICROCOMPUTER DESIGN BOOK. | $30 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | | **Total List Price** | | $530 | $690 | $805 | $991 | $438 | $566 | $1127 |
| | | **Less System Discount of** | | $ 35 | $ 15 | $ 30 | $ 96 | $ 43 | $ 71 | $ 132 |
| | | **System Price, Only** | | $495 | $675 | $775 | $895 | $395 | $495 | $ 995 |

Please note: Discounts apply to system purchases only. Write for quote on quantity discounts.

*For that special application, you may want one or more of these optional hardware items:*

| Model | Description | Remarks | Price |
|---|---|---|---|
| AT423-1 | Prom/RAM Board | WITH DECODERS; NO MEMORY; SPACE FOR 2K PROM (1702) & 1K RAM. | $78 |
| AT424-4 | Serial Interface | 2 UARTS, PROG. BAUD RATE FOR EIA AND MODEL 33 TTY. | $179 |
| AT483 | Prom/RAM Board | NEEDS + 5V ONLY, W/DECODERS ONLY SPACE FOR 8K PROM (2708) & 1K RAM. | $119 |
| KT9009 | I/O KIT | TWO PAIRS OF I/O PORTS, ONE MEM. MAPPED, ONE STANDARD. | $35 |
| BD425 | Breadboard | FOR CUSTOM CIRCUITRY; HOLES FOR DIP SOCKETS. | $15 |
| 1000 | 50-Pin Header | SOLDER TYPE, FOR PC BOARD. MATES WITH #1001. | $3.00 |

| Model | Description | Remarks | Price |
|---|---|---|---|
| 1001 | Ribbon Cable Socket | CLAMPS ONTO 50-COND. CABLE. BOARD PLUGS IN. | $6.00 |
| 1002 | Wirewrap Header | 50-PIN HEADER, LONG PINS. FOR USE ON BREADBOARD. | $7.50 |
| KT9002 | Wirewrap Sockets | KIT OF WIREWRAP SOCKETS, 14 TO 40 PINS, 21 TOTAL. | $28 |
| KT9003 | Solder Sockets | KIT OF SOLDER SOCKETS, 14 TO 40 PINS, 21 TOTAL. | $13 |
| 6000 | Hex Spacers | 5/8-IN. LONG, 1/4-IN. DIA. SEPARATES BOARDS. KIT OF 16. | $2.00 |

*Leaders in Microcomputer values—order today from Semiconductor Specialists!*

# mike 2 microcomputer modules

*MARTIN RESEARCH* announces a new series of microcomputer modules, entitled the *MIKE 2*. The *MIKE 2* consists of a group of printed circuit boards which may be combined to produce a variety of microcomputer configurations. The *MIKE 2* has been designed to allow the user to assemble a working microcomputer at a very attractive price. And, the system may be expanded to suit the needs of the user. To introduce the *MIKE 2*, *MARTIN RESEARCH* is offering a basic kit, including four circuit boards, from which a *completely self-contained* microcomputer can be built.

*MIKE 2-1* . . . *CPU BOARD*--Based on the 8008, still the only 8-bit microprocessor with over two years of applications experience, and available *now* at reasonable prices. The *MIKE 2-1* includes a crystal-controlled timing circuit and all necessary TTL chips for basic control.

*MIKE 2-2* . . . *KEYBOARD/DISPLAY BOARD*--Allows the user to program the microcomputer and to see the results, at minimal cost. Includes a 16-key calculator-type keyboard, on which instructions are entered in numeric form, and a six-digit, fully-decoded LED display.

*MIKE 2-3* . . . *PROM/RAM BOARD*--Space for up to eight 1702 programmable ROM chips, and up to eight 2112 RAM chips. Capacity: 2K bytes PROM, 1K bytes RAM. With bidirectional bus drivers for interfacing with the CPU.

*MIKE 2-11A* . . *POWER SUPPLY BOARD*--Fully-regulated, short-proof power supply. For 117-volt source; provides +5V, 3A, -9V, 1A. With transformer windings, board space, etching, drilled holes, and instructions for adding +12V, 1A, and -12V, 1A.

*PRICES* . . . .

| *ITEM* | *KIT* | *ASSEMBLED & TESTED* | *PCB ONLY* | |
|---|---|---|---|---|
| *MIKE 2-1 WITHOUT 8008* | $44.95 | $59.95 | $19.95 | [*U.S.A. prices. Illinois add 5%.*] |
| *8008 MICROPROCESSOR** | 39.95 | 39.95 | 39.95 | |
| *MIKE 2-2* | 44.95 | 54.95 | 14.95 | |
| *MIKE 2-3 (1-1702, 2-2112)* | 39.95 | 54.95 | 16.95 | |
| *MIKE 2-11A* | 39.95 | 49.95 | 15.95 | |
| *CONNECTORS & 2 FT. CABLE* | 29.95 | 32.95 | ----- | |
| *TOTAL WITHOUT 8008* | 199.75 | 252.75 | 67.80 | |
| *TOTAL WITH 8008* | 239.70 | 292.70 | 107.75 | |

*MIKE 201* . . . As an introductory offer, the above items are offered together as the *MIKE 201* microcomputer. As a kit, the *MIKE 201* sells for *$169.95* without an 8008, a $199 value. With an 8008, the *MIKE 201* kit sells for *$209.95*, a $239 value. This offer reflects a system savings of $30.00, and is good through April 30, 1975.

**CHIP PRICES* . Note that the 8008 microprocessor is sold by *MARTIN RESEARCH* only with the *MIKE 2-1* CPU board. Extra 1702 PROMs are available for $20.00 each, up to seven, with the *MIKE 2-3*. (The second 1702 is normally a cassette interface program chip.) Extra 2112 chips, up to six, are available with the *MIKE 2-3* for $4.75 each.

*TOP QUALITY*. . All ICs provided, including the 8008, are top quality, premium devices, factory-tested and guaranteed. No factory seconds or high-temp rejects *(check this out before purchasing a "bargain" micro from another source--is the manufacturer's trademark on the chip?)*. PCBs are commercially produced to industrial standards, with plated-through holes, precision alignment. *MIKE 2* boards measure 5.5 by 7.0 inches and stack up vertically, interconnecting via a carefully designed data bus with 50-wire ribbon cable and quality connectors. This modular design allows easy expansion, quick troubleshooting.

*MICROCOMPUTER DESIGN* *MARTIN RESEARCH* has published a 300-page book on hardware design with the 8008. For information, contact *MARTIN RESEARCH*.

MARTIN MR RESEARCH

mike 2

# Modules

*Listed below are some of our ideas on what a good microcomputer system should include. What are your suggestions? We would very much like to hear what you expect from a microcomputer. If we get enough votes for your idea, we'll build it! And, if you need more details on any of the MIKE 2 series just ask. We'll automatically send details to folks on our mailing list; just return this sheet.*

*Name* _____ *Phone* _____

*Address* _____

*City* _____ *State* _____ *ZIP* _____

COMMENTS, SUGGESTIONS, QUESTIONS:

*More space? Insert extra sheet; fold in 3 so our address shows; staple; mail.*

*MIKE 2* BOARDS UNDER DEVELOPMENT:

*2-4, ROM BOARD*--8-1702A PROMs (2K bytes); 1-8316 ROM (2K bytes) w/monitor program.
*2-5, RAM BOARD*--32-2102 RAM chips, for total of 4K bytes (32,768 bits) of memory.
*2-6, CRT DISPLAY INTERFACE*--[Not available for release until further notice.]
*2-7, DIODE ROM*--Inexpensive ROM: programmed with signal diodes. 32 bytes.
*2-8, ROM BOARD*--8-5704, 8-3604.
*2-9, CASSETTE RECORDER INTERFACE*--For data storage on standard audio machines.
*2-10, TELETYPE INTERFACE*--For hard copy. With *MONITOR-8* ROM, 512 bytes of RAM.
*2-12, 16-CHANNEL DISPLAY*--Displays CPU bus data on scope, instructions on LEDs.
*2-13, FULL ASCII KEYBOARD*--Full keyboard with ASCII coding, interface to CPU.
*2-14, PROM PROGRAMMER*--Most inexpensive programmer for 1702 PROMs.
*2-15, BREADBOARD*--Plenty of space for custom circuits, in *MIKE 2* modular format.
*2-16, CREED INTERFACE*--Matches *MIKE 2* to CREED teletypes now on surplus market.
*2-17, FLOPPY DISC INTERFACE*--For large memory requirements.
*2-18, UART/MODEM*--Allows data transmission over phone lines.

Postage Will Be Paid by Addressee

**BUSINESS REPLY MAIL**
First Class Permit No. 71453 • Chicago, Illinois

No Postage Stamp Necessary If Mailed in the United States

**MARTIN RESEARCH LTD.**

**1825 S. HALSTED ST.**

**CHICAGO, IL. 60608**

# Chapter Outline



| | | |
|---|---|---|
| 1. | INTRODUCTION | *What a microcomputer is and how it is used. Focus of this book: practical microcomputer design, with examples and schematics.* |
| 2. | THE 8008 | *Brief introduction to microcomputers. 8008 architecture, block diagram. Timing signals. PCI, PCR, PCC, PCW cycles explained. Instructions listed in numerical order.* |
| 3. | THE 8080 | *General description. Some comparisons with the 8008. Applicability of 8008 designs in this book to the 8080. 8080 instruction set.* |
| 4. | OTHER MICROPROCESSORS | *Important characteristics of other available microprocessors, in chart form.* |
| 5. | 8008 MAIN TIMING LOGIC | *Clock circuits.* Efficient enable and strobe signal generation saves CPU chip count.* Master reset.** |
| 6. | BUS STRUCTURES | *Introduction to bus structures. Latching logic; three-state devices. Advanced strobe techniques. Bus transceivers and bi-bus drivers. The 8008 data bus.* |
| 7. | INPUT/OUTPUT INSTRUCTIONS | *8008 I/O data transfer sequences. Generating input enable and output strobe signals.* Peripheral strobe decoding techniques.** |
| 8. | INPUT DESIGN APPROACHES | *8008/8080 data bus input voltages. Multiplexers.* Bus-only input design.* Expanding 8008 input ports with conditional inputs.* Additional input ports addressed as memory.** |
| 9. | OUTPUT TECHNIQUES | *Pulse outputs.* Conditional outputs.* Addressable latches.* Other latching outputs.* When an input is an output.* |
| 10. | COMBINED INPUT/OUTPUTS | *Combined input/output techniques: table lookups.* Sine table.* Byte-swapping.* Adding a UART to a microcomputer.** |
| 11. | ADDING 8008 INSTRUCTIONS | *Normally unused 8008 instruction codes. Output any register.* One-byte PUSH-POP instruction.* Numbered JUMP, CALL, RETURN instructions.* One-byte WAIT instruction.** |
| 12. | EXPANDING 8008 CAPABILITIES | *One-byte push-pop (LIFO) register.* Sixteen-byte LIFO.* A 32-byte FIFO register.** |
| 13. | RANDOM ACCESS MEMORY | *8008 memory referencing. The RAM-PAGE option: optimal design for small microcomputers.* The 256 x 4 RAM;* 1024 x 1 static RAM;* 4096 x 1 dynamic RAM.* Sketch of transparent dynamic RAM refresh system for 8008.** |
| 14. | READ ONLY MEMORY | *Simple diode-programmable ROM for breadboarding, prototyping.* Field-programmable ROM (F/ROM), with programmer.* Reprogrammable PROMs. Comparison of types of ROM. ROMIN option allows flexible addressing of ROM in the microcomputer.** |
| 15. | DIRECT MEMORY ACCESS | *Direct memory access defined. Sketch of system for 8080 microprocessor.** |

** Schematic diagram included.*

MARTIN MR RESEARCH

**microcomputer design**

©1974 Martin Research Ltd.

# Chapter Outline

| | | |
|---|---|---|
| 16. | INTERRUPTS | *The initial interrupt. 8008 interrupt race. Simple interrupts.* Introduction to priority interrupt systems.* Interrupt request register.* Synchronization register.* Priority encoders, registers.* Interrupts being serviced register.* Priority comparator.* Interrupt jam logic.* Numbered return instruction.* Using an addressable latch as an interrupt register.* Three-level priority interrupt system.* Full eight-level priority interrupt system.* Outline of daisy-chain interrupt system.* |
| 17. | SAVING STATUS DURING INTERRUPTS | *Necessity for saving status: the PC stack; index registers; flags. Overview of status-saving techniques for 8008. Saving registers with hardware.* Latching up the flags.* Saving all four flags with hardware.* Four system examples, with software.* |
| 18. | INTERVAL TIMERS | *How timers are used. Timer that causes interrupts.* Timer for input ports.* Interval timer clocks.* Precounters.* |
| 19. | DIGITAL DISPLAYS | *Digital displays at microcomputer output ports.* Segment decoders.* Multiplexing.** |
| 20. | PERIPHERAL INTERFACE DESIGN | *Systems considerations in designing a peripheral interface. Cost-effective modularity. An efficient 8008 bus structure for optimal peripheral interfacing.** |
| 21. | KEYBOARDS | *Keyboard encoders.* FIFO data buffer.* Inputting to the microprocessor.* Implementing the REPEAT function with software.* Doing it with interrupts.* |
| 22. | ANALOG INPUTS AND OUTPUTS | *An analog interface system for microcomputers. Input amplifiers.* One-channel A/D converter.* Sample/hold; track/hold.* Analog multiplexer.* Successive approximation A/D converter.* D/A converter.* Multiple analog outputs.* Analog range switching; software.** |
| 23. | SOFTWARE TRICKS | *Clear the A register. Complement. Multiple precision ADD and SUBTRACT. Incrementing the H and L registers. Clear RAM. Indexed jump table. Indexed loops. Hard HALT instruction. PUSH all registers.* |
| 24. | TESTING | *Testing microprocessors. Simple test program. Designing for easy testing. Sixteen-channel oscilloscope display for any triggered-sweep 'scope.* Three-digit display to read data bus information in octal form, on the fly at normal system speed.* Reading T3 information only.* Stepping through instructions.* Using the READY line for testing. Using self-transfer instructions for testing.* |
| 25. | MINIMAL MICROCOMPUERSS | *A nine-chip 8008 microcomputer, suitable for CPU testing and instruction.* Using the CC-DH register as a buffer.* A twenty-dollar microcomputer.* A seven-chip microcomputer with 2,048 bytes of ROM.** |
| 26. | NINETEEN-CHIP MICROCOMPUTER | *Nineteen-chip microcomputer circuit with full ASCII keyboard, extra input port, 2,048 bytes of ROM, 256 bytes of RAM.** |

** Schematic diagram included.*



©1974 Martin Research Ltd.

# There's more to microcomputer design than counting your chips.

Here is some new information to help you win at the product design game. *Microcomputer Design*, a new book by Martin Research, can show you how to cut the chip count on your 8008-based CPU by 20-50%. This is the first major source on cost-effective design with microprocessors. It shows you how to build increased performance and lower cost into your microprocessor system through the efficient use of your chips.

You'll find systems covered from theory to practice — from large to small. Plus important features on . . .

- **Designing for maximum flexibility and easy expansion.**
- **What should go into the peripheral, and what goes into the microcomputer.**
- **The most efficient bus structure for the 8008 yet published.**
- **A complete communications controller with keyboard, only 19 chips including 8008, ROM, RAM, and interface.** *(Also available as module: contact Martin Research.)*
- **Most design concepts applicable to any 8-bit microprocessor.**
- **Over 300 pages, dozens of schematics, and an easy-to-use lay-flat format.**

If you are working with microprocessors, you need *Microcomputer Design*. The book won't fit up your sleeve, but when you're designing for high stakes, it's like having an extra ace.

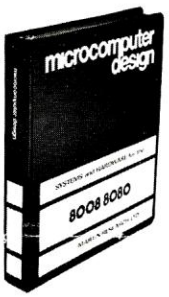
## BLUE-CHIP SPECIAL

Because of the success of our pre-publication promotion, we continue offering one 8008 microprocessor with each book for $100.00.
Or, try the *blue-chip special*: $110.00 for the book plus one 8008-1, factory-tested for 12.5 microseconds cycle time (60% faster than the standard 8008).

With chips like these — ***you can't lose.***

MARTIN MR RESEARCH

Suite 11
1825 S. Halsted St.
Chicago, IL 60608
(312) 829-6932




Send me ____ copies of *Microcomputer Design*:

- ☐ With 8008 microprocessor for $100.00.*
- ☐ Blue-chip special: book with 8008-1, $110.00.*
- ☐ Book alone, $75.00.*
- ☐ Check enclosed (shipping free).
- ☐ Purchase order enclosed. Bill my company for goods plus shipping.
- ☐ Send more information.

Name _____

Title _____ Phone _____

Company _____

Address _____

City _____ State _____ Zip _____

Signature _____

*USA prices. Illinois: add 5%.

# microcomputer design

**There's more to it than just counting your chips.**

Here is some new information to help you win at the product design game. ***Microcomputer Design***, a new book by Martin Research, can show you how to cut the chip count on your 8008-based CPU by 20-50%. This is the first major source on cost-effective design with microprocessors. It shows you how to build increased performance and lower cost into your microprocessor system through the efficient use of your chips.

You'll find systems covered from theory to practice — from large to small. Plus important features on . . .

- **What should go into the peripheral, and what goes into the microcomputer.**
- **The most efficient bus structure for the 8008 yet published.**
- **A complete communications controller with keyboard, only 19 chips including 8008, ROM, RAM, and interface.**
- **Over 40 pages on interrupt handling with the 8008.**
- **Most design concepts applicable to any 8-bit microprocessor.**
- **Over 300 pages, dozens of schematics, and an easy-to-use lay-flat format.**

If you are working with microprocessors, you need ***Microcomputer Design***. The book won't fit up your sleeve, but when you're designing for high stakes, it's like having an extra ace.

## BLUE-CHIP SPECIAL

Because of the success of our prepublication promotion, we continue offering one 8008 microprocessor with each book for $100.00.

Or, try the ***blue-chip special***: $110.00 for the book plus one 8008-1, factory-tested for 12.5 microseconds cycle time (60% faster than the standard 8008).

And contact us for information on our economical microcomputer modules, available soon!

With deals like these — ***you can't lose.***

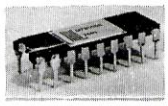
MARTIN MR RESEARCH

1825 S. Halsted St.
Chicago, IL 60608
(312) 829-6932

Send me ___ copies of *Microcomputer Design*:

- ☐ With 8008 microprocessor for $100.00.*
- ☐ Blue-chip special: book with 8008-1, $110.00.*
- ☐ Book alone, $75.00.*

- ☐ Check enclosed (shipping free).
- ☐ Purchase order enclosed. Bill my company for goods plus shipping.
- ☐ Send more information.



Name

Title Phone

Company

Address

City State Zip

Signature

*USA prices. Illinois: add 5%.

*Now available: 8080 with the book, $200*

# More Information

*Thank you for your interest in* MICROCOMPUTER DESIGN. *Since many people have become aware of the book through magazine reviews or friends, we include current information below.*

*PRICES*

As advertised, *Microcomputer Design* is available with one 8008 microprocessor for $100.00. Our *blue-chip special* includes the book plus an 8008-1 for $110.00, and the book is now available with an 8080 microprocessor for $200.00. The book alone costs $75.00. These are U.S. prices, subject to change. Quantity prices are shown below; there is no discount on the book-plus-microprocessor kit. Martin Research is not authorized to sell the microprocessors alone. *Educators: write on letterhead for school discounts.*

| | *1* | *2* | *3-9* | *10-24* | *25 and up* |
|---|---|---|---|---|---|
| BOOK ALONE | $75 | 60 | 52 | 45 | *By quote* |
| WITH 8008 | $100 | 100 | 100 | 100 | 100 |
| WITH 8008-1 | $110 | 110 | 110 | 110 | 110 |
| WITH 8080 | $200 | 200 | 200 | 200 | 200 |

*TAXES*

Non-exempt Illinois purchasers, please add 5%.

*SHIPPING*

*Prepaid* orders will be shipped within the U.S. at our cost, by UPS (by mail in non-UPS areas). Orders requiring billing will be charged for shipping, FOB Chicago.

*TERMS*

Recognized corporate or institutional purchasers, net 30. Martin Research reserves the right to request prepayment, or to delay shipment while checks clear. Martin Research honors Master Charge; please include card no. and expiration date.

*ABOUT THE MICROPROCESSORS*

Each microprocessor is a first-quality device, in a ceramic package, with gold-plated leads. The 8008-1 is factory-tested for a state cycle time of 2.5 microseconds or better (60% faster than the standard 8008 specs) and is so marked by the manufacturer. The manufacturer's manual is supplied with the chip.

*CONTENTS OF THE BOOK*

See the *CHAPTER OUTLINE*. The book is an original work, going far beyond the literature available from the microprocessor manufacturers. It concentrates primarily on hardware design ideas for building microcomputers with the 8008/8080.

*MODULES*

Martin Research is introducing a series of microcomputer modules, embodying some of the design ideas in the book, in June, 1975. Please write to make sure you are on our mailing list for details.

*CONSULTANT SERVICES*

Martin Research is available for consultation services involving microcomputer design.

*5/75*

MARTIN MR RESEARCH

**microcomputer design**